

HYBRID-ELECTRIC VEHICLES

It's no accident the most fuel-efficient vehicles in some classes for the 2004 model year are hybrid-electric vehicles (HEVs). Hybrids can be configured in many different ways to achieve a variety of different objectives. They combine the best features of the internal combustion engine with an electric motor and can significantly improve fuel economy without sacrificing performance or driving range. HEVs may also be configured to provide electrical power to auxiliary loads such as power tools.

HEVs are primarily propelled by an internal combustion engine, just like conventional vehicles. However, they also convert energy normally wasted during coasting and braking into electricity, which is stored in a battery until needed by the electric motor. The electric motor is used to assist the engine when accelerating or hill climbing and in low-speed driving conditions where internal

combustion engines are least efficient. Unlike all-electric vehicles, HEVs now being offered do not need to be plugged into an external source of electricity to be recharged; conventional gasoline and regenerative braking provide all the energy the vehicle needs.

Potential buyers should also be aware that the federal government is currently offering tax incentives for HEVs and other alternative fuel vehicles. Some states also offer incentives.

Additional information on HEVs, including tax incentives, can be found at www.fueleconomy.gov/feg/hybrid_sbs.shtml. Annual fuel cost is estimated assuming 15,000 miles of travel each year (55% city and 45% highway) and a gasoline fuel cost of \$1.40 per gallon.

	Trans Type / Speeds	Eng Size / Cylinders	MPG City / Hwy	Annual Fuel Cost	Notes / Abbreviations
TWO SEATERS					
HONDA					
Insight	AV	1.0/3 ..	57/56	\$376	
.....	M-5	1.0/3 ..	60/66	\$334 ..	LB

COMPACT CARS					
HONDA					
Civic Hybrid	AV	1.3/4 ..	48/47	\$437 ..	LB
.....	M-5	1.3/4 ..	46/51	\$437 ..	LB
.....	AV	1.3/4 ..	47/48	\$447	
.....	M-5	1.3/4 ..	45/51	\$447	

MIDSIZE CARS					
TOYOTA					
Prius	AV	1.5/4 ..	60/51	\$382	

* Fuel economy estimates not available at time of publication. Visit www.fueleconomy.gov for updated information.

DIESEL VEHICLES

This section contains fuel economy values for diesel-fueled vehicles. Diesel fuel contains approximately 10% more energy per gallon than gasoline. In addition, diesel engines have higher compression ratios, run "lean," and are unthrottled, giving them a substantial fuel economy advantage over gasoline engines. Annual fuel cost is estimated assuming 15,000 miles of travel each year (55% city and 45% highway) and a diesel fuel cost of \$1.35 per gallon.

	Trans Type / Speeds	Eng Size / Cylinders	MPG City / Hwy	Annual Fuel Cost	Notes / Abbreviations
SUBCOMPACT CARS					
VOLKSWAGEN					
New Beetle	M-5	1.9/4 ..	38/46	\$494	
.....	A-S6 ...	1.9/4 ..	36/42	\$533	
COMPACT CARS					
VOLKSWAGEN					
Golf	M-5	1.9/4 ..	38/46	\$494	
.....	A-S5 ...	1.9/4 ..	33/44	\$547	
Jetta	M-5	1.9/4 ..	38/46	\$494	
.....	A-S5 ...	1.9/4 ..	33/44	\$547	

	Trans Type / Speeds	Eng Size / Cylinders	MPG City / Hwy	Annual Fuel Cost	Notes / Abbreviations
STANDARD PICKUP TRUCKS 2WD					
CHEVROLET					
C15 Silverado Hybrid	A-4	5.3/8 ..	NA*	NA*	
GMC					
C15 Sierra Hybrid	A-4	5.3/8 ..	NA*	NA*	
STANDARD PICKUP TRUCKS 4WD					
CHEVROLET					
C15 Silverado Hybrid	A-4	5.3/8 ..	NA*	NA*	
GMC					
C15 Sierra Hybrid	A-4	5.3/8 ..	NA*	NA*	

	Trans Type / Speeds	Eng Size / Cylinders	MPG City / Hwy	Annual Fuel Cost	Notes / Abbreviations
SMALL STATION WAGONS					
VOLKSWAGEN					
Jetta Wagon	M-5	1.9/4 ..	36/47	\$494	
.....	A-S5 ...	1.9/4 ..	33/44	\$547	

ABBREVIATIONS:

A Automatic Transmission
A-S Special Automatic Transmission
AV Continuously Variable Transmission
City MPG on City Test Procedure
CNG Compressed Natural Gas

Conv Convertible
E85 85% Ethanol/15% Gasoline
Eng Size .. Engine Volume in Liters
FFV Flexible Fuel Vehicle
Hwy MPG on Highway Test Procedure

LB Lean Burn Fuel System
LPG Liquefied Petroleum Gas
M Manual Transmission
NA Not Available
Trans Transmission

ETHANOL FLEXIBLE-FUEL VEHICLES

This section contains the driving range and fuel economy values for ethanol flexible-fuel passenger cars and light trucks. Ethanol flexible-fuel vehicles are designed to operate on gasoline, E85 (a mixture of 85% ethanol and 15% gasoline), or any mixture of the two fuels. Annual fuel cost is estimated assuming 15,000 miles of travel each year (55% city and 45% highway) and an average fuel cost of \$1.50 per gallon of E85 and \$1.40 per gallon of gasoline.

The driving range and fuel economy values are shown for both gasoline and E85. When operating your FFV on mixtures of gasoline and E85, such as when alternating between using these fuels, your driving range and fuel economy values will be somewhere between those listed for the two fuels, depending on the actual percentage of gasoline and E85 in the tank.

	Trans Type / Speeds	Eng Size / Cylinders	MPG City / Hwy	Annual Fuel Cost	Fuel	Range
COMPACT CARS						
CHRYSLER						
Sebring Convertible	A-4	2.7/6	15/20 .. \$1,323 ..	E85	270	
			21/28 .. \$914 ..	Gas	390	
Sebring Conv (2-Mode) ..	A-4	2.7/6	15/20 .. \$1,323 ..	E85	270	
			21/28 .. \$876 ..	Gas	390	
MERCEDES-BENZ						
C240 Sedan FFV	A-5	2.6/6	14/19 .. \$1,406 ..	E85	260	
			20/25 .. \$1,092 ..	Premium	360	
C320 Sedan (Incl Sport) ..	A-5	3.2/6	15/19 .. \$1,406 ..	E85	260	
			20/26 .. \$1,092 ..	Premium	360	
C320 Sports Coupe FFV ..	A-5	3.2/6	15/19 .. \$1,406 ..	E85	260	
			20/26 .. \$1,092 ..	Premium	360	
MIDSIZE CARS						
CHRYSLER						
Sebring 4-door	A-4	2.7/6	15/20 .. \$1,323 ..	E85	270	
			21/28 .. \$914 ..	Gas	390	
Sebring 4-door (2-Mode) ..	A-4	2.7/6	15/20 .. \$1,323 ..	E85	270	
			21/28 .. \$876 ..	Gas	390	
DODGE						
Stratus 4-door	A-4	2.7/6	15/20 .. \$1,323 ..	E85	270	
			21/28 .. \$914 ..	Gas	390	
Stratus 4-door (2-Mode) ..	A-4	2.7/6	15/20 .. \$1,323 ..	E85	270	
			21/28 .. \$876 ..	Gas	390	
SMALL STATION WAGONS						
MERCEDES-BENZ						
C240 Wagon FFV	A-5	2.6/6	14/19 .. \$1,406 ..	E85	260	
			20/25 .. \$1,092 ..	Premium	360	
C320 Wagon FFV	A-5	3.2/6	15/19 .. \$1,406 ..	E85	260	
			20/26 .. \$1,092 ..	Premium	360	
STANDARD PICKUP TRUCKS 2WD						
CHEVROLET						
C1500 Silverado 2WD ...	A-4	5.3/8	11/14 .. \$1,874 ..	E85	310/390*	
			15/19 .. \$1,312 ..	Gas	410/520*	
FORD						
Explorer Sport Trac 2WD ..	A-5	4.0/6	12/16 .. \$1,730 ..	E85	290	
			16/21 .. \$1,168 ..	Gas	410	
GMC						
C1500 Sierra 2WD	A-4	5.3/8	11/14 .. \$1,874 ..	E85	310/390*	
			15/19 .. \$1,312 ..	Gas	410/520*	
SPORT UTILITY VEHICLES 2WD						
CHEVROLET						
C1500 Avalanche 2WD ..	A-4	5.3/8	10/14 .. \$1,874 ..	E85	310/390*	
			14/18 .. \$1,401 ..	Gas	410/520*	
C1500 Suburban 2WD ..	A-4	5.3/8	10/14 .. \$1,874 ..	E85	310/390*	
			14/18 .. \$1,401 ..	Gas	410/520*	
C1500 Tahoe 2WD	A-4	5.3/8	11/14 .. \$1,874 ..	E85	310/390*	
			14/19 .. \$1,312 ..	Gas	410/520*	
SPORT UTILITY VEHICLES 4WD						
CHEVROLET						
K1500 Avalanche 4WD ..	A-4	5.3/8	10/14 .. \$1,874 ..	E85	280/380*	
			14/18 .. \$1,312 ..	Gas	380/510*	
K1500 Avalanche AWD ..	A-4	5.3/8	10/14 .. \$1,874 ..	E85	280/380*	
			14/18 .. \$1,312 ..	Gas	380/510*	
K1500 Suburban 4WD ...	A-4	5.3/8	10/14 .. \$1,874 ..	E85	280/380*	
			14/18 .. \$1,312 ..	Gas	380/510*	
K1500 Suburban AWD ...	A-4	5.3/8	10/14 .. \$1,874 ..	E85	280/380*	
			14/18 .. \$1,312 ..	Gas	380/510*	
K1500 Tahoe 4WD	A-4	5.3/8	10/14 .. \$1,874 ..	E85	280/380*	
			14/18 .. \$1,312 ..	Gas	380/510*	
K1500 Tahoe AWD	A-4	5.3/8	10/14 .. \$1,874 ..	E85	280/380*	
			14/18 .. \$1,312 ..	Gas	380/510*	
STANDARD PICKUP TRUCKS 4WD						
CHEVROLET						
K1500 Silverado 4WD ...	A-4	5.3/8	10/13 .. \$2,045 ..	E85	280/380*	
			14/17 .. \$1,401 ..	Gas	380/510*	
FORD						
Explorer Sport Trac 4WD ..	A-5	4.0/6	12/15 .. \$1,730 ..	E85	290	
			15/20 .. \$1,235 ..	Gas	380	
GMC						
K1500 Sierra 4WD	A-4	5.3/8	10/13 .. \$2,045 ..	E85	280/380*	
			14/17 .. \$1,401 ..	Gas	380/510*	

* Driving ranges are shown for standard and optional fuel tanks.

ABBREVIATIONS:

A Automatic Transmission
A-S Special Automatic Transmission
AV Continuously Variable Transmission
City MPG on City Test Procedure

Conv Convertible
D Diesel
Elec Electric Vehicle
Eng Size .. Engine Volume in Liters
FFV Flexible Fuel Vehicle

Hwy MPG on Highway Test Procedure
M Manual Transmission
NA Not Available
T Turbocharger/Supercharger
Trans Transmission

COMPRESSED NATURAL GAS VEHICLES

This section supplies the driving range and fuel economy values for vehicles designed to be operated on compressed natural gas (CNG). For bi-fuel vehicles, the values for both gasoline and CNG are shown. Bi-fuel vehicles are designed to be operated on either of two fuels, in separate tanks, and can switch between the two.

CNG fuel is normally dispensed in "equivalent gallons," where one equivalent gallon is equal to 121.5 cubic feet of CNG. Therefore, the fuel economy values are shown in miles per gallon-equivalent. Annual fuel cost estimates are based on an average fuel price of \$0.90 per gallon of CNG and \$1.40 per gallon of gasoline.

The driving range is shown in miles and represents the distance the vehicle can travel on a full tank (or tanks) of fuel during combined city and highway driving (55% city and 45% highway).

	Trans Type / Speeds	Engine Size / Cylinders	MPG City/Hwy	Annual Fuel Cost	Fuel	Range
SUBCOMPACT CARS						
CHEVROLET						
Cavalier (bi-fuel)	A-4	2.2/4	23/32	\$520 ..	CNG	130
			24/32	\$777 ..	Gas	390

COMPACT CARS						
HONDA						
Civic (CNG only)	AV	1.7/4	30/34	\$421 ..	CNG	200

STANDARD PICKUP TRUCKS 2WD						
CHEVROLET						
C2500 HD Silverado 2WD ..	A-4	6.0/8	10/12	\$1,227 ..	CNG	180
(CNG only)						

FORD						
F150 Natural Gas	A-4	5.4/8	12/16	\$964 ..	CNG	250
F150 2WD (bi-fuel)	A-4	5.4/8	11/15	\$1,038 ..	CNG	120
			12/16	\$1,615 ..	Gas	120

STANDARD PICKUP TRUCKS 4WD						
FORD						
F150 Pickup 4WD (bi-fuel) ..	A-4	5.4/8	11/14	\$1,125 ..	CNG	120
			12/15	\$1,615 ..	Gas	120

VANS, CARGO TYPE						
CHEVROLET						
Express (bi-fuel)	A-4	6.0/8	12/16	\$1,038 ..	CNG	170
			12/16	\$1,615 ..	Gas	420
Express (CNG only)	A-4	6.0/8	12/16	\$1,038 ..	CNG	320

GMC						
Savana (bi-fuel)	A-4	6.0/8	12/16	\$1,038 ..	CNG	170
			12/16	\$1,615 ..	Gas	420
Savana (CNG only)	A-4	6.0/8	12/16	\$1,038 ..	CNG	320

VANS, PASSENGER TYPE						
CHEVROLET						
Express (bi-fuel)	A-4	6.0/8	12/16	\$1,038 ..	CNG	170
			12/16	\$1,615 ..	Gas	420
Express (CNG only)	A-4	6.0/8	12/16	\$1,038 ..	CNG	320
GMC						
Savana (bi-fuel)	A-4	6.0/8	12/16	\$1,038 ..	CNG	170
			12/16	\$1,615 ..	Gas	420
Savana (CNG only)	A-4	6.0/8	12/16	\$1,038 ..	CNG	320

LIQUEFIED PETROLEUM GAS (PROPANE) VEHICLES

This section contains the estimated city and highway fuel economy values and the driving range for passenger cars and light trucks designed to be operated on liquefied petroleum gas (LPG), which is commonly known as propane. For bi-fuel vehicles, both the gasoline and the LPG mpg values and driving ranges are listed, if available. Bi-fuel LPG vehicles have two fuel tanks. Annual fuel cost estimates are based on an average fuel price of \$1.40 per gallon of LPG and \$1.40 per gallon of gasoline.

	Trans Type / Speeds	Engine Size / Cylinders	MPG City/Hwy	Annual Fuel Cost	Fuel	Range
STANDARD PICKUP TRUCKS 2WD						
FORD						
F150 Pickup 2WD (bi-fuel)	A-4	5.4/8	11/15	\$1,615 ..	LPG	270/240/340*
			14/19	\$1,313 ..	Gas	480/400**
STANDARD PICKUP TRUCKS 4WD						
FORD						
F150 Pickup 4WD (bi-fuel)	A-4	5.4/8	11/15	\$1,615 ..	LPG	270/240/340*
			14/19	\$1,313 ..	Gas	480/400**

* Driving ranges are shown for regular-cab models, super-cab models, and an optional fuel tank available for both models, respectively.

** Driving range shown for regular-cab and super-cab models, respectively.

ABBREVIATIONS:

A Automatic Transmission
A-S Special Automatic Transmission
AV Continuously Variable Transmission

City MPG on City Test Procedure
CNG Compressed Natural Gas
Conv Convertible
E85 85% Ethanol/15% Gasoline
Eng Size .. Engine Volume in Liters

FFV Flexible Fuel Vehicle
Hwy MPG on Highway Test Procedure
M Manual Transmission
NA Not Available
Trans Transmission

FUEL CELL VEHICLES

ADVANCED TRANSPORTATION TECHNOLOGY

Although fuel cell vehicles (FCVs) are not expected to reach the mass market for at least a decade, a limited number will be available for sale or lease in 2004-5 to demonstration fleets in parts of the country with a readily accessible hydrogen supply.

FCVs represent a radical departure from conventional vehicles with internal combustion engines. They use emerging technology with the potential to reduce harmful emissions substantially, as well as energy use and our dependence on foreign oil.

FCVs are propelled by electric motors powered by fuel cells, which produce electricity from the chemical energy of hydrogen. They are more efficient than conventional vehicles, and the only by-product of a hydrogen fuel cell is water. FCVs may also incorporate other advanced automotive technologies to increase efficiency.

THE CHALLENGES AHEAD

Much work remains before FCVs can be mass-marketed and sold at local dealerships. Significant research and development is required to reduce costs and improve performance in areas such as driving range, cold-weather operation, and durability. A new refueling infrastructure may also be required to make hydrogen fuel widely available to consumers.

Automakers, fuel cell and component developers, government agencies, and others are working hard to accelerate the introduction of FCVs. In fact, partnerships such as the DOE-led FreedomCAR Initiative and the California Fuel Cell Partnership have been formed to encourage private companies and government agencies to work together to prove this technology's viability and move FCVs toward widespread commercialization. For more information about FCVs and links to fuel cell web sites, please visit www.fueleconomy.gov/feg/fuelcell.shtml.

	Vehicle Class	Motor	Energy Storage Device	Fuel	Miles per kilogram (City/Hwy)	Range (mi)
HONDA						
FCX	Subcompact	60 kW DC* Brushless	8 Farad Ultra Capacitor	Hydrogen	51/46	160
FORD						
Focus	Compact	65 kW AC*	180 Volt NiMH Battery*	Hydrogen	NA**	NA**

* kw = kilowatts; DC = direct current; AC = alternating current; NiMH = nickel metal hydride

** The fuel economy values and driving range were not available at press time. See www.fueleconomy.gov for updated information.